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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

10/525591

Applicant's or agent's file reference 03/116PCT International application No. PCT/EP 03/09746			FOR FURTHER ACTIO	N See Notifica Preliminary	ation of Transmittal of International Examination Report (Form PCT/IPEA/416)	
			International filing date (day/n 01.09.2003	onth/year)	Priority date (day/month/year) 30.08.2002	
		nt Classification (IPC) or	both national classification and IP			
cant AKB\	/ et a	l				
This Auth	intern ority a	national preliminary ex and is transmitted to t	camination report has been pre he applicant according to Artic	pared by this I e 36.	International Preliminary Examining	
2. This REPORT consists of a total of 7 sheets, including this cover sheet.						
This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).						
These annexes consist of a total of 2 sheets.						
This report contains indications relating to the following items:						
I	\boxtimes					
11		Priority		egard to novelty, inventive step and industrial applicability		
			•			
		•		and to novelt	/ inventive step or industrial applicability	
V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicable citations and explanations supporting such statement				y, inventive step of industrial applicability;		
VI ☐ Certain documents cited			cited			
VII Certain defects in the international application						
VIII Certain observations on the international application						
of sub	missio	n of the demand	Dat	e of completion	of this report	
23.03.2004			01	12.2004		
Name and mailing address of the international preliminary examining authority:				norized Officer	ches Patenten	
European Patent Office					Till The Til	
	Eu	•		nmer, B		
	This Auth This IIIIV VIIIVIII of sub	This international Applies (See These annotated See These See Thes	ational application No. I/EP 03/09746 lational Patent Classification (IPC) or \$\frac{3}{3}/122\$ cant AK BV et al. This international preliminary exauthority and is transmitted to the series of a total and the series of a to	International application No. ### ################################	International filing date (day/month/year) Altional application No. APP 03/09746 International filing date (day/month/year) 101.09.2003 International patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national classification and IPC International Patent Classification (IPC) or both national application International application	

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/09746

I. Ba	sis	of	the	repor	t
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1. With regard to the **elements** of the international application (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)):

	Des	scription, Pages	•				
	1-15	5	as originally filed				
Claims, Numbers							
1-15			filed with telefax on 26.07.2004				
	D==	wines Chasts					
	Dra	wings, Sheets					
	1/2-	2/2	as originally filed				
2.			age, all the elements marked above were available or furnished to this Authority in the ternational application was filed, unless otherwise indicated under this item.				
	The	These elements were available or furnished to this Authority in the following language: , which is:					
		the language of a tra	anslation furnished for the purposes of the international search (under Rule 23.1(b)).				
		the language of publ	lication of the international application (under Rule 48.3(b)).				
		the language of a tra Rule 55.2 and/or 55.	anslation furnished for the purposes of international preliminary examination (under 3).				
With regard to any nucleotide and/or amino acid sequence disclosed in the international applic international preliminary examination was carried out on the basis of the sequence listing:							
		contained in the inte	rnational application in written form.				
		filed together with th	e international application in computer readable form.				
☐ furnished subsequently to this Authority in written form.							
☐ furnished subsequently to this Authority in computer readable form.			ntly to this Authority in computer readable form.				
		The statement that t in the international a	he subsequently furnished written sequence listing does not go beyond the disclosure pplication as filed has been furnished.				
		The statement that t listing has been furn	he information recorded in computer readable form is identical to the written sequence ished.				
4. The amendments have resulted in the cancellation of:							
		the description,	pages:				
		the claims,	Nos.:				
		the drawings,	sheets:				

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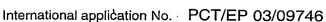
5.		This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).					
		(Any replacement sheet contain report.)	ning sı	uch amendm	ents must be referred to under item 1 and annexed to this		
6.	Add	litional observations, if necessal	y :				
111.	Nor	n-establishment of opinion wi	th reg	ard to novel	ty, inventive step and industrial applicability		
1.	The obv	e questions whether the claimed invention appears to be novel, to involve an inventive step (to be non- vious), or to be industrially applicable have not been examined in respect of:					
		☐ the entire international application,					
	\boxtimes	claims Nos. 15 with respect to industrial applicability					
		because:					
	×	the said international application, or the said claims Nos. 15 with respect to industrial applicability relate to the following subject matter which does not require an international preliminary examination (specify):					
	see separate sheet						
		the description, claims or drawings (indicate particular elements below) or said claims Nos. are so uncle that no meaningful opinion could be formed (specify):					
		the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.					
		no international search report has been established for the said claims Nos.					
2.	or a	neaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and Imino acid sequence listing to comply with the standard provided for in Annex C of the Administrative ructions:					
	·	1 the written form has not been furnished or does not comply with the Standard.					
		the computer readable form has not been furnished or does not comply with the Standard.					
۷.	V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability citations and explanations supporting such statement						
1. Statement							
	No	velty (N)	Yes: No:	Claims Claims	3,4,6-9,11-13 1,2,5,10,14,15		
	Inv	entive step (IS)	Yes: No:	Claims Claims	1-15		
	Ind	ustrial applicability (IA)	Yes: No:	Claims Claims	1-14		

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see separate sheet



EXAMINATION REPORT - SEPARATE SHEET

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Claim 15 relates to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Art. 34(4)(a)(I) PCT).

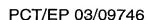
Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1. Reference is made to the following documents:
 - D4: MH BEERS: "The Merck Manual of Diagnosis and Therapy" 1999, MERCK RESEARCH LABORATORIES, WHITEHOUSE STATION, XP002260508
 - D5: EP-A-0 613 877 (EISAI KAGAKU KK) 7 September 1994 (1994-09-07)
 - D6: EP-A-1 153 548 (UNILEVER PLC ;UNILEVER NV (NL)) 14 November 2001 (2001-11-14)
 - D7: GB-A-2 180 747 (KREITZMAN STEPHEN NEIL) 8 April 1987 (1987-04-08)
 - D9: VERMEER C ET AL: 'Role of K vitamins in the regulation of tissue calcification.' JOURNAL OF BONE AND MINERAL METABOLISM. JAPAN 2001, vol. 19, no. 4, 2001, pages 201-206, XP001153227 ISSN: 0914-8779

The present examination was carried out under the assumption that the priority was validly claimed; therefore, the document WO 03/ 013420 cited as a P-document in the International Search Report was not taken into account for the subsequent examination.

- 2. Novelty (Art. 33(2) PCT)
- 2.1 According to the description the subject-matter of the present application encompasses the treatment and prevention of cardiovascular disease conditions including hypertension, left ventricular hypertrophy, congestive heart failure, myocardial



EXAMINATION REPORT - SEPARATE SHEET

infarction, stroke, Mönckeberg's sclerosis and coronary heart disease (p. 3, l. 6-8).

Prior art document D5 discloses the treatment of ischemic heart diseases such as congestive heart failure with vitamin K derivatives (p. 2, I. 5-8) and the use of menaquinone for promoting bone health, cardiovascular health and prevention of osteoporosis from D6 (claims 14, 15).

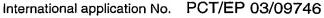
Thus D5 and D6 are novelty destroying for the subject-matter of claims 1, 2, 5 and 15 of the present application.

- 2.2 Prior art document D7 discloses the therapeutic use of a composition comprising vitamin K, vitamin D3, calcium, magnesium and zinc (ex. 4). As claims 10-14 of the present application are worded as first medical use claims, D7 is novelty destroying for the subject-matter of claims 10 and 14 of the present application.
- 3. Inventive Step (Art. 33(3) PCT)
- Inventive step cannot be assessed when the requirements of novelty are not met. 3.1 However, in the light of the above cited prior art, it appears that the problem underlying the present patent application lies in the provision of a new therapeutic use of vitamin K or a derivative thereof. The claimed subject-matter relates, in the light of the above cited prior art to an obvious solution of the problem.

Furthermore, it is known from D9 that calcification of the vessel wall is a process regulated by similar proteins and processes as those known from bone metabolism. As the therapeutic use of vitamin K for the treatment of osteoporosis is known from D6 (see above) the use of vitamin K for the treatment of age related stiffening of arteries and decrease in compliance of arteries according to independent claim 1 of the present application, which are diseases based on calcification of vessel walls (see D4: p. 1658, right col., para. 5) is obvious and does not involve an inventive step.

3.2 Dependent claims 3, 4, 6-9 and 11-13 do not appear to contain any additional features which involve an inventive step when combined with the subject-matter of any claim to which they refer. Dependent claims are only allowable when related to a patentable independent claim (Rule 6.4 PCT).





EXAMINATION REPORT - SEPARATE SHEET

4. Further remarks

Claim 8 is not supported by the description as required by Art. 6 PCT; according to the description (p. 6, l. 18) the treatment period is 6, 18 and 36 months (Art. 6 PCT).

5. For the assessment of the present claim 15 on the question whether it is industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.